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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,591	10/12/2001	Tao Chen	020020	2233
23696 7590 10/23/2007 QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121			EXAMINER HOM, SHICK C	
			ART UNIT 2616	PAPER NUMBER
			NOTIFICATION DATE 10/23/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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5

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/976,591	CHEN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shick C. Hom	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7, 8, 11-18, 20-32, 34, 36-47 and 49-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 11-18, 20-32, 34, 36-47 and 49-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/26/07 has been entered.

***Response to Arguments***

2. Applicant's arguments with respect to claims 1-5, 7-8, 11-18, 20-32, 34, 36-47, and 49-54 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at

Art Unit: 2616

the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 7-8, 14-18, 20-22, 26-32, 34, 41-47, 49, and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (6,598,203) in view of Meyer (4,750,167).

Regarding claims 1, 4-5, 7, 14, 17-18, 20, 31-32, 41, 51-52:

Tang discloses the encoding method for reducing decoding complexity, the method comprising:

encoding systematic bits of a bit stream in each of a plurality of buffers with a first code (Figs. 2-3 and col. 2

Art Unit: 2616

line 36 to col. 3 line 4 recite coding, i.e. encoder 102, a stream of digital data bits in a parallel manner including a plurality of buffer, i.e. buffer 94, which allow the input data to be written into and read out of clearly anticipate encoding bits of a bit stream in each of a plurality of buffers with a first code);

          multiplexing content of the plurality of buffers (Fig. 3 shows multiplex 134, 136, multiplexing the content of the buffers 94).

Regarding claims 2-3, 15-16, 29-30, 44-45:

          Tang discloses wherein said encoding systematic bits in each of the plurality of buffers with the first code comprises encoding systematic bits in each of the plurality of buffers with a block code and wherein said encoding systematic bits in each of the plurality of buffers with a block code comprises encoding systematic bits in each of the plurality of buffers with a Reed-Solomon code (col. 2 line 49 to col. 3 line 4 recite the Reed-Solomon encoders mapping a block of 7-bit input symbols into another block of 7-bit symbols).

Regarding claims 8, 14, 21-22, 26, 41, 52:

          Tang discloses the method reducing decoding complexity, comprising de-multiplexing frame to a plurality of buffers, wherein the de-multiplexing comprises identifying a block of

Art Unit: 2616

bits comprising the frame belonging to at least one of the plurality of buffers, and providing the block of bits to at least one of the plurality of buffers (Fig. 3 shows demultiplexing 92 frame to a plurality of buffers 94); and processing content of each of the plurality of buffers into a bit stream (Fig. 3 shows the encoder 102, 128, commutator 90 and mux 134, 136 processing content of each of the buffers into a bit stream).

Regarding claims 27-28, 42-43:

Tang discloses wherein each of said plurality of buffers is configured to store systematic bits and parity bits; and wherein each of said plurality of encoders is configured to encode systematic bits to provide parity bits (col. 5 lines 30-39 recite the encoder providing the parity symbols).

Regarding claims 1, 8, 14, 26, 34, 41:

Tang discloses all the subject matter of the claimed invention with the exception of encoding said multiplexed content with a second code to provide a set of frames, wherein the encoding said multiplexed content comprises identifying a block of bits to be encoded and then coding the block of bits with the second code as in claims 1, 14, 26, 34; and decoding received frames by a first decoder as in claims 8, 14.

Meyer from the same or similar fields of endeavor teach that it is known to provide the step of encoding said multiplexed content with a second code to provide a set of frames, wherein the encoding said multiplexed content comprises identifying a block of bits to be encoded and then coding the block of bits with the second code (Fig. 1 and col. 7 lines 4-26 shows and recite the multiplexed data 30 being inputted to the encoder and frame circuit 32 for transmission); and decoding received frames by a first decoder (the abstract recite the receiver which decodes the frames).

Thus, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to provide the step of encoding said multiplexed content with a second code to provide a set of frames, wherein the encoding said multiplexed content comprises identifying a block of bits to be encoded and then coding the block of bits with the second code; decoding received frames by a first decoder as taught by Meyer in the communications method of Tang.

The step of encoding said multiplexed content with a second code to provide a set of frames, wherein the encoding said multiplexed content comprises identifying a block of bits to be encoded and then coding the block of bits with the second code; decoding received frames by a first decoder can be implemented

Art Unit: 2616

by connecting the encoder and frame circuit 32 of Meyer to the multiplexer and connecting the frame decoder of Meyer to the receiver of Tang.

The motivation for providing the step of encoding said multiplexed content with a second code to provide a set of frames, wherein the encoding said multiplexed content comprises identifying a block of bits to be encoded and then coding the block of bits with the second code; decoding received frames by a first decoder as taught by Meyer in the communication method of Tang being that it provides higher precision for transmission of signal in a common carrier defined frame.

6. Claims 12, 24, 36-39, 50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (6,598,203) and Meyer (4,750,167) in view of Chen et al. (6,052,812).

Regarding claims 12, 24, 36-39, 50, 53:

For claims 12, 24, 36-39, 50, 53, Tang and Meyer disclose the apparatus and method described in paragraph 5 of this office action. Tang and Meyer disclose all the subject matter of the claimed invention with the exception of providing indication of an erasure to a second decoder communicatively coupled to at least one of the plurality of buffers that would receive the



Art Unit: 2616

correctly decoded frame if the frame failed to decode correctly as in claims 12, 24, 36-38, 50, and decode the systematic portion of at least one of the plurality of buffers by an outer decoder when the systematic portion is recoverable as in claims 39, 53.

Chen et al. from the same or similar fields of endeavor teach that it is known to provide an indication of an erasure to a second decoder communicatively coupled to at least one of the plurality of buffers that would receive the correctly decoded frame if the frame failed to decode correctly and decode the systematic portion of at least one of the plurality of buffers by an outer decoder when the systematic portion is recoverable (see col. 18 lines 35-51 which recite correcting packets by decoding those packets having the erasure value indicating an error). Thus, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to provide indication of an erasure to a second decoder communicatively coupled to at least one of the plurality of buffers that would receive the correctly decoded frame if the frame failed to decode correctly, and decode the systematic portion of at least one of the plurality of buffers by an outer decoder when the systematic portion is recoverable as taught by Chen et al. in the communications apparatus and method of Tang

Art Unit: 2616

and Meyer. The indication of an erasure to a second decoder communicatively coupled to at least one of the plurality of buffers that would receive the correctly decoded frame if the frame failed to decode correctly, and decode the systematic portion of at least one of the plurality of buffers by an outer decoder when the systematic portion is recoverable can be implemented by connecting the outer decoder including indication of an erasure if the frame failed to decode correctly of Chen et al. to the decoder unit of Tang and Meyer. The motivation for using the outer decode as taught by Chen et al. in the communication apparatus and method of Tang and Meyer being that it provides more reliability for the system since the system can recover from failed decode at the receiving end.

7. Claims 11, 13, 23, 25, 40, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (6,598,203), Meyer (4,750,167), and Chen et al. (6,052,812) in view of Naden et al. (6,560,206).

Regarding claims 11, 13, 23, 25, 40, 54:

For claims 11, 13, 23, 25, 40, Tang, Meyer, and Chen et al. disclose the apparatus and method described in paragraph 6 of this office action. For claims 13, 25, 40 Tang, Meyer, and Chen

Art Unit: 2616

et al. disclose all the subject matter of the claimed invention with the exception of wherein said processing content of each receive buffer comprises: providing systematic portion of each buffer to higher layers as in claims 11, 13, 23, 25, 40, 54.

Naden et al. from the same or similar fields of endeavor teach that it is known to provide systematic portion of each buffer to higher layers (see col. 10 lines 40-46). Thus, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to wherein said processing content of each receive buffer comprises: providing systematic portion of each buffer to higher layers as taught by Naden et al. in the apparatus and method of Tang, Meyer, and Chen et al. The step of providing systematic portion of each buffer to higher layers can be implemented by using layer approach of design of Naden et al. in the encoder of Tang, Meyer, and Chen et al. The motivation for using the layer approach including providing systematic portion of each buffer to higher layers as taught by Naden et al. in the method and apparatus of Tang, Meyer, and Chen et al. being that it provides more reliable and efficiency for the system since the system is more modular and can be better interfaced and changed.

### **Conclusion**

Art Unit: 2616

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Riazi et al. disclose a cluster frame synchronization scheme for a satellite digital audio radio system.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shick C. Hom whose telephone number is 571-272-3173. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pham Chi can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER

10/17/07